

Amendments to the Claims

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-6 (cancelled)

7. (Currently amended) A method of mining a collection of data, comprising:

receiving the collection of data, the collection of data comprising key words, wherein a key word comprises a semantically coherent character string;

converting the collection of data into labeled data by grouping various types of data into a same format and assigning a label indicating a category of item contents, such that the labeled data that includes a category and a data attribute and is in analyzable condition for concept extraction, and wherein the labeled data comprises the label and a clause comprising the item contents;

assigning a category to the key words, wherein the category references a concept so that the key words can be handled as concepts with a meaning;

separating the clauses into pairs comprising an independent word and an attached word;

assigning categories to the separated clauses using syntactic patterns and a category dictionary;

generating, by syntactic analysis, a syntactic tree of a sentence comprising the separated clauses; ~~combining the collection of labeled data in the common format into clauses of related data;~~

assigning a category to one or more key words from the labeled data;

receiving a syntactically analyzed sentence as input, identifying mutually dependent relationships between or among the categorized key words, according to at least one rule defining mutually dependent relationships between or among categorized key words;

grouping the identified mutually dependent relationships into groups of related

mutually dependent relationships; and

extracting the key words with mutually dependent relationships in the same sentence as labeled data with concepts, wherein the step of extracting key words comprises using a mutually dependent relationship extraction rule comprising a string of categories of arbitrary length to be extracted;

searching for unique concepts, a unique concept being a concept whose statistical characteristic is distinguished beyond a threshold with the set to which it belongs;

creating and keeping statistical information;

visually displaying the statistical information; and

presenting a distribution of differences of the unique concepts.

8. (Currently amended) The method of claim 7 wherein the categorized key words identified as being in a mutually dependent relationship exist within separate clauses.

9. (Previously presented) The method of claim 8 wherein the separate clauses exist within separate sentences.

10. (Previously presented) The method of claim 7 wherein the converting step comprises conversion of the received collection of data into the same format and wherein the received collection of data comprises various data formats.

11. (Canceled)

(Currently amended) The method of claim 7 wherein the ~~associating~~ assigning of [[a]] the category ~~with to~~ each key word comprises searching [[a]] the category dictionary to identify [[a]] the category which matches the key word.

12. (Previously presented) The method of claim 12 wherein the category dictionary comprises combinations of original expressions, parts of speech, concepts and categories,

wherein the original expressions are equivalent to the key words, the parts of speech are a classification of the key words, the concepts are replacement expressions for the key words and the categories represent a larger group having the nature of the key word.

13. (Previously presented) The method of claim 7 wherein the mutually dependent relationships are determined according to rules applied to key words and their associated categories within a clause.

14. (Cancelled)

15. (Previously presented) The method of claim 7 wherein the mutually dependent relationship extraction rule are provided manually by a user for each of the identified groups of mutually dependent relationships in response to the user being presented a display of all the groups of mutually dependent relationships, at a GUI.

16. (Previously presented) The method of claim 7 further comprising presenting the identified groups in which the mutually dependent relationship extraction rule applies to a user at a GUI.

17. (Previously presented) The method of claim 7 further comprising comparing the identified groups in which the mutually dependent relationship extraction rule applies against a set of rules to determine a course of action, wherein the course of action comprises automatically notifying a user that the mutually dependent relationship extraction rule applies.

18. (Previously presented) The method of claim 7 wherein the mutually dependent relationship extraction rule is predefined.

19. (Previously presented) The method of claim 7 wherein the mutually dependent relationship extraction rule is entered manually by a user during a request by the user for specific relationships between categories, whereby mutually dependent relationships by categories are defined by the user according to the user's needs.

21. (Currently amended) An article of manufacture, embodying logic to perform a method of mining a collection of data, comprising:

a user interface for:

receiving a collection of data, the collection of data comprising key words,

wherein the key words comprise semantically coherent character strings;

visually displaying statistical information; and

presenting a distribution of differences of unique concepts;

and

a processor embodying logic for:

converting the ~~received~~ collection of data into [[a]] labeled data by grouping various types of data into a same format and assigning a label indicating a category of item contents, such that the labeled data that includes a category and a data attribute and is in analyzable condition for concept extraction, and wherein the labeled data comprises the label and a clause comprising the item contents;

assigning a category to the key words, wherein the category references a concept so that the key words can be handled as concepts with a meaning;

separating the clauses into pairs comprising an independent word and an attached word;

assigning categories to the separated clauses using syntactic patterns and a category dictionary;

generating, by syntactic analysis, a syntactic tree of a sentence comprising the separated clauses; ~~combining the converted received data into clauses of related data;~~

assigning a category to one or more key words from the labeled data;

receiving a syntactically analyzed sentence as input, identifying mutually dependent relationships between or among the categorized words, within each of the clauses;

grouping the identified mutually dependent relationships into groups of related mutually dependent relationships;

extracting the key words with mutually dependent relationships in the same

sentence as labeled data with concepts, wherein the step of extracting key words comprises using a mutually dependent relationship extraction rule comprising a string of categories of arbitrary length to be extracted; and

searching for the unique concepts, ~~[[a]]~~ the unique concept being a concept whose statistical characteristic is distinguished beyond a threshold with the set to which it belongs;

creating and keeping the statistical information~~[[:]]~~
~~visually displaying the statistical information; and~~
~~presenting a distribution of differences of the unique concepts.~~

22. (Previously presented) The article of manufacture of claim 21 wherein converting comprises conversion of the received collection of data into the same format, wherein the received collection of data is made up of various data formats.

23. (Canceled)

24. (Previously presented) The article of manufacture of claim 21 wherein the associating of a category with each key word comprises searching a category dictionary to identify a category which matches the key word.

25. (Previously presented) The article of manufacture of claim 24 wherein the category dictionary comprises combinations of original expressions, parts of speech, concepts and categories, wherein the original expressions are equivalent to the key words, the parts of speech are a classification of the key words, the concepts are replacement expressions for the key words and the categories represent a larger group having the nature of the key word.

26. (Previously presented) The article of manufacture of claim 21 wherein the mutually dependent relationships are determined according to rules applied to key words and their associated categories within a clause.

27-28. (Cancelled).

29. (Currently amended) A system for data mining, comprising:

a data conversion subsystem for receiving an input of inquiry data comprising key words, wherein the key words comprise semantically coherent character strings, and for providing labeled data that includes a category and a data attribute;

a concept extraction subsystem for assigning a category to a key word of input labeled data, wherein the category references a concept such that the key word can be handled as a concept with a meaning, and for extracting concepts from among the key words to which a category is assigned;

a category dictionary to assign a replacement expression having a representative meaning of the key word and a category to the key word therein for providing categorized concepts;

a characteristic detection subsystem for receiving labeled data with concepts and for extracting unique concepts, a unique concept being a concept whose statistical characteristic is distinguished beyond a threshold with respect to the set to which it belongs, for creating and keeping statistical information for a subset of the data; and to visually display the statistical information and presenting distribution differences of the unique concepts.

30. (Currently amended) A data mining service comprising:

a data conversion service for receiving an input of inquiry data comprising key words, wherein the key words comprise semantically coherent character strings, and for providing labeled data that includes a category and a data attribute;

a concept extraction service for assigning a category to a key word of input labeled data, wherein the category references a concept such that the key word can be handled

as a concept with a meaning, and for extracting concepts from among the key words to which a category is assigned;

a category dictionary to assign a replacement expression having a representative meaning of the key word and a category to the key word therein for providing categorized concepts;

a characteristic detection service for receiving labeled data with concepts and for extracting unique concepts, a unique concept being a concept whose statistical characteristic is distinguished beyond a threshold with respect to the set to which it belongs, for creating and keeping statistical information for a subset of the data; and to visually display the statistical information and to present distribution differences of unique concepts.

31. (Previously presented) The method of claim 7 wherein the data is inquiry data provided by customers.

32. (Previously presented) The article of manufacture of claim 21 wherein the data is inquiry data provided by customers.